CLAIMS

What is claimed is:

1. An apparatus for generating one or more evaluation metrics associated with the performance of a statistical remultiplexer, the apparatus comprising:

at least one input for receiving at least a portion of first data associated with the performance of a statistical remultiplexer;

logic for generating second data associated with the performance of the statistical remultiplexer, wherein the second data is an evaluation metric generated using at least a portion of the first data, the second data providing a quantitative measure of the performance of the statistical remultiplexer; and

at least one output for outputting the second data.

2. The apparatus as recited in claim 1, wherein the second data is an evaluation metric associated with at least one of amount of bit rate reduction, change in video quality, wasted output bandwidth, decoder buffer model data level, bit rate reduction characteristics, and time delay.

3. The apparatus as recited in claim 1, wherein the apparatus is integrated into a statistical remultiplexer.

4. The apparatus as recited in claim 1, wherein the apparatus is separate from and connectable to a statistical remultiplexer.

5. A method for generating an evaluation metric associated with the performance of a statistical remultiplexer, the method comprising:

obtaining input data associated with at least a portion of one or more input compressed bit streams input to a statistical remultiplexer;

obtaining output data associated with at least a portion of an output compressed bit stream output from the statistical remultiplexer; and

generating an evaluation metric utilizing the input data and the output data, the evaluation providing a quantitative measure of the performance of the statistical remultiplexer.

6. The method as recited in claim 5, wherein obtaining input data comprises determining one or more input bit rates of at least a portion of the one or more input compressed bit streams, obtaining output data comprises determining an output bit rate of the portion of the output compressed bit stream, and generating the evaluation metric comprises determining the amount of bit rate reduction performed by the statistical remultiplexer utilizing the input bit rates and the output bit rate.

7. The method as recited in claim 6, wherein the input bit rates of the one or more input compressed bit streams do not include a bit rate attributable to filler packets present in the portion of the one or more input compressed bit stream(s), and wherein the output compressed bit rate does not include a bit rate attributable to filler packets.

8. The method as recited in claim 5, wherein the amount of bit rate reduction is a percentage of bit rate reduction.

9. The method as recited in claim 5, wherein the evaluation metric is generated by an evaluator.

10. The method as recited in claim 5, wherein obtaining input data comprises determining input video quality of at least a portion of the one or more input compressed bit streams, obtaining output data comprises determining output video quality of at least a portion of the output compressed bit stream, and generating an evaluation metric comprises determining a difference in video quality between the input video quality and the output video quality.

11. The method as recited in claim 10, wherein the difference in video quality is based upon pixel measurements.

12. The method as recited in claim 10, wherein the difference in video quality is a means square difference.

13. The method as recited in claim 10, wherein difference in video quality is based upon a signal-to-noise ratio.

14. The method as recited in claim 5, wherein the evaluation metric indicates at least one of an amount of bit rate reduction performed, number of frames subjected to bit rate reduction, and number of bits reduced per frame.

15. The method as recited in claim 5, wherein the input data and the output data are obtained for one or more frames input to a data reduction process over a specified time period and wherein the evaluation metric is an average value over the specified time period.

16. A method for generating an evaluation metric associated with the performance of a statistical remultiplexer, the method comprising:

simultaneously measuring the reference clock time of an input compressed bit stream channel input to a statistical remultiplexer and the reference clock time of an output compressed bit stream channel output from a statistical remultiplexer;

calculating the difference of the reference clock time of the input compressed bit stream channel and the reference clock time of the output compressed bit stream channel; and

generating an evaluation metric associated with the time delay of the statistical remultiplexer.

17. The method of claim 16 further comprising:

determining the time-base shift of the statistical remultiplexer; and

compensating the difference by the time-base shift.

18. A method for generating an evaluation metric associated with the performance of a statistical remultiplexer, the method comprising:

determining the amount of null packets present in at least a portion of an output compressed bit stream;

determining the total available output bandwidth; and

generating an evaluation metric associated with the amount of wasted bandwidth in the compressed bit stream output from the statistical remultiplexer.

19. The method as recited in claim 18, wherein the amount of wasted bandwidth is a percentage of wasted output bandwidth.

20. A method for generating an evaluation metric associated with the performance of a statistical remultiplexer having a decoder buffer model, the method comprising:

determining a first level of data present in a decoder buffer model at a first time;

determining one or more levels of data present in the decoder buffer model at different subsequent times within a time interval, T, measured from the first time; and

generating an evaluation metric associated with the decoder buffer model fullness.

21. The method as recited in claim 20, wherein the evaluation metric is generated using the first and one or more levels of data by calculating at least one of mean level of data, maximum level of data, minimum level of data, variance in the level of data; and, median level of data present in the decoder buffer model over the time interval, T.

22. The method as recited in claim 20, wherein each of the subsequent times occurs each time a picture is decoded.

23. A method for generating an evaluation metric associated with the performance of a statistical remultiplexer, the method comprising:

inputting one or more types of data associated with the performance of a statistical remultiplexer to an evaluator;

generating at the evaluator one or more evaluation metrics associated with the performance of the statistical remultiplexer utilizing at least a portion of the one or more types of data input to the evaluator; and

outputting the one or more evaluation metrics from the evaluator.

24. The method as recited in claim 23, wherein the one or more types of data comprise at least one of video and audio data.

25. The method as recited in claim 23 wherein the one or more evaluation metrics generated by the evaluator are associated with at least one of amount of bit rate reduction performed by the statistical remultiplexer, change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer.

26. A device for generating one or more evaluation metrics associated with the performance of a statistical remultiplexer, the device comprising:

means for receiving at least a portion of first data associated with the performance of a statistical remultiplexer;

means for generating second data associated with the performance of the statistical remultiplexer, wherein the second data is an evaluation metric generated using at least a portion of the first data, the second data providing a quantitative measure of the performance of the statistical remultiplexer; and

means for outputting the second data.

27. The device as recited in claim 26, wherein the evaluation metric is associated with at least one of amount of bit rate reduction performed by the statistical remultiplexer, change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer.

28. A computer readable medium containing executable computer program instructions which when executed by a digital processing system cause the system to perform a method for generating an evaluation metric associated with the performance of a statistical remultiplexer, the method comprising:

obtaining one or more types of data associated with the performance of a statistical remultiplexer;

generating one or more evaluation metrics associated with the performance of the statistical remultiplexer utilizing at least a portion of the one or more types of data; and

outputting the one or more evaluation metrics.

29. The computer readable medium of claim 28, wherein the evaluation metric is associated with at least one of amount of bit rate reduction performed by the statistical remultiplexer, change in video quality attributable to the statistical remultiplexer, wasted output bandwidth by the statistical remultiplexer, decoder buffer level fullness, bit rate reduction characteristics of the statistical remultiplexer, and time delay attributable to the statistical remultiplexer.